

Amendments to the Claims:

This listing of claims will replace all prior versions and listing of claims in the application.

Listing of Claims:

1. (Previously Presented) A data duplication method which duplicates data being stored in a storage subsystem connected to a computer, wherein said computer includes a processor unit and a storing unit, and said storage subsystem includes a plurality of storage media managed as a plurality of volumes, said method comprising:

 a first storing step that causes said storing unit to store an identification information list indicative of identification information for identifying each of the plurality of volumes to be supplied to an application program which is processed by the computer,

 a second storing step that causes said storing unit to store a first duplication definition information which stores identification information indicative of a copy origin volume and identification information indicative of a copy destination volume,

 an identification information reading step which reads out from the storing unit the identification information list,

 a first reading step which reads out from the storing unit, a first duplication definition information,

a first comparing step which compares the identification information list read out in the identification information reading step, and the first duplication definition information read out in the first reading step,

an addition step in which when there exists first identification information that is stored in the identification information list but not stored in the first duplication definition information in the first comparing step, a copy destination volume of a volume identified by the first identification information is selected according to a predetermined selection condition, the first identification information and the identification information of the copy destination volume thus selected are added to the first duplication definition information, and data in the volume identified by the first identification information of the copy origin volume is copied to the copy destination volume thus selected, and

a deletion step in which when there exists second identification information that is not stored in the identification information list but is stored in the first duplication definition information in the first comparing step, the second identification information and identification information of a copy destination volume, which is a copy destination of a volume identified by the second identification information, are deleted from the first duplication definition information, and copying the data of the volume identified by the second identification information is stopped.

2. (Previously Presented) The data duplication method according to claim 1, wherein,

there exist a plurality of said storage subsystems connected to the computer, and a plurality of said storage subsystems which include said copy destination volume.

3. (Currently Amended) The data duplication method according to claim 1, wherein, further including:

a second reading step which reads out from said storing unit, a second duplication definition information which stores identification information with respect to each of said plurality of volumes as a copy destination, and identification information of a volume as a further copy destination of each of said volumes,

a second comparing step which compares the first duplication definition information read out in said first reading step, and the second duplication definition information read out in said second reading step,

an addition step in which when there exists third identification information that is stored in the first duplication definition information but not stored in the second duplication definition information in the second comparing step, a further copy destination volume of a volume identified by the third identification information is selected according to a predetermined selection condition, the third identification information and identification information of the further copy destination volume thus selected are added to the second duplication definition information, and data in the

volume identified by the third identification information is copied to the further copy destination volume thus selected, and

a deletion step in which when there exists fourth identification information that is not stored in the first duplication definition information but is stored in the second duplication definition information in the second comparing step, the fourth identification information and identification information of a further copy destination volume, which is a further copy destination of a volume identified by the fourth identification information, are deleted from the second duplication definition information, and copying the data of the volume identified by the fourth identification information is stopped.

4. (Previously Presented) The data duplication method according to claim 1, wherein,

said selection condition includes information which has caused an error to occur in said addition step.

5. (Currently Amended) A computer readable memory storing a computer program executable by a processor unit in a computer, for causing said computer to which duplicates data being stored in a storage subsystem connected to a-the computer, wherein said computer includes a-the processor unit and a storing unit, and said storage subsystem includes a plurality of storage media managed as a plurality of

volumes, ~~and said program causes being executed by the processor unit causing~~
~~said processor unit to execute~~ carry out steps comprising:

a first storing step that causes said storing unit to store therein an identification information list indicative of identification information for identifying each of the plurality of volumes to be supplied to an application program which is processed by the computer,

a second storing step that causes said storing unit to store therein a first duplication definition information which stores identification information indicative of a copy origin volume and identification information indicative of a copy destination volume,

an identification information reading step which reads out from the storing unit the identification information list,

a definition information reading step which reads out from the storing unit, the first duplication definition information,

a comparing step which compares the identification information list read out in the identification information reading step, and the first duplication definition information read out in the duplication definition reading step,

an addition step in which when there exists first identification information that is stored in the identification information list but not stored in the first duplication definition information in the comparing step, a copy destination volume of a volume identified by the first identification information is selected according to a predetermined selection condition, the first identification information of the copy

origin volume and the identification information of the copy destination volume thus selected are added to the first duplication definition information, and volume data identified by the first identification information of the copy origin is copied to the copy destination volume thus selected, and

a deletion step in which when there exists second identification information that is not stored in the identification information list but is stored in the first duplication definition information in the comparing step, the second identification information and identification information of a volume, which is a copy destination of a volume identified by the second identification information, are deleted from the first duplication definition information, and copying the data of the volume identified by the second identification information is stopped.

6. (Previously Presented) A computer which duplicates data stored in a storage subsystem, comprising:

a first storing means which stores an identification information list in which identification information of each of a plurality of storage media included in said storage subsystem is stored,

a second storing means which stores duplication definition information including identification information with respect to each of said plurality of volumes of a copy origin, and identification information of a copy destination volume of each of said volumes, and a comparing means which compares the identification information

list stored in said first storing means, and the duplication definition information stored in said second storing means, wherein,

when there exists first identification information that is stored in said identification information list but not stored in said duplication definition information, said comparing means selects, according to a predetermined selection condition, a copy destination volume of a volume identified by the first identification information, adds to said duplication definition information, the first identification information and the identification information of said copy destination volume thus selected, and copies data in the volume identified by the first identification information to said copy destination volume thus selected, and

when there exists second identification information that is not stored in said identification information list, but stored in said duplication definition information, said comparing means deletes, from said duplication definition information, the second identification information and identification information of a copy destination volume, which is a copy destination of a volume identified by the second identification information, and stops copying of data in the volume identified by the second identification information.

7. (Currently Amended) A method of managing duplicating of data ~~which is stored~~ in a storage subsystem ~~which is connected~~ to a computer, wherein the storage subsystem includes a first disk subsystem and a second disk subsystem connected

to the first disk subsystem, and the computer includes a processing unit and a storing unit, the management method comprising:

a first storing step which stores disk subsystem configuration information in the storing unit, the disk subsystem configuration information manages-being used for managing a plurality of first volumes in the first disk subsystem ~~which is be~~ supplied to an application operated on the computer as a virtual volume, ~~among volumes of the first disk subsystem,~~

a second storing step which stores copy definition information in the storing unit, the copy definition information ~~indicates~~ indicating a correspondence between each of the first volumes and a corresponding second volume in the second disk subsystem, each second volume being a copy destination of data which is stored in at least one of the first volumes, ~~among volumes of the second disk subsystem,~~

a comparing step which compares the disk subsystem configuration information with the copy definition information,

an addition step which adds information indicative of one the first volumes in ~~to~~ the copy definition information, when information indicative of the one of the first volumes contained in the virtual volume is not contained in the copy definition information in the comparing step, and which adds information indicative of ~~the one~~ of said second volumes ~~in to~~ the copy definition information as a copy destination of the data which is to be stored in the one of first volumes to be added,

a deletion step which deletes the copy definition information relating to one of the first volumes from the copy definition information, when ~~the information indicating~~

the first ~~that a~~ volume which is different from the first volumes contained in the virtual volume is stored in the copy definition information in the comparing step.

8. (Currently Amended) The method according to claim 7,

the first storing step further stores, as disk subsystem configuration information, information indicative of disk sub systems and information indicative of a volume configuration of each of the disk sub systems, wherein

the adding step of adding the information indicative of the second volume to the copy definition information, further refers to the information indicative of the disk subsystem stored and information indicative of a the volume configuration of the disk subsystem to determine whether there exists a candidate sub-disk subsystem for a copy destination, and when there exists a candidate sub-disk subsystem, further determines whether there exists in the sub-candidate disk subsystem-candidate, a second volume that is not used yet and to which the one of the first volumes added to the copy definition information can be copied, and when there exists the second volume that can be copied, adds information indicative of the second volume to the copy definition information as a copy destination of the first volume which has been added to the copy definition information.

9. (Currently Amended) The method according to claim 8, further carrying out:

a third storing step in which when the first volume ~~being~~ that is the copy origin for the duplicated data[[,]] is copied ~~in~~ to the second volume ~~being~~ that is the copy

destination and is further copied in a third volume ~~being the~~ that is a copy destination in a third disk system, group related definition information is stored in the storing unit, the group related definition information ~~associates the~~ associating a first copy group information which is information indicative of correspondence between the first volume and the second volume with ~~the~~ a second copy group information which is information indicative of correspondence between the second volume and ~~[[.]]~~ the third volume;

a determination step which determines whether there exists a related copy group by referring to the copy group related information after the adding step; and

a setting step in which when there exists a related copy group, information indicative of the second volume ~~being the~~ that is the copy destination of the first copy group is ~~set~~ specified as ~~the~~ a copy original volume of the second copy group in the copy definition information.

10. (Currently Amended) The method according to claim 8, further carrying out

a third storing step in which when the first volume ~~being the~~ that is the copy origin for the duplicated data, is copied in the second volume ~~being the~~ that is the copy destination and is further copied in a third volume ~~being the~~ that is a the-copy destination in a third disk system, group related definition information is stored in the storing unit, the group related definition information ~~associates the~~ associating a first copy group information which is information indicative of a correspondence between the first volume and ~~[[.]]~~ the second volume with ~~the~~ a second copy group information which is

information indicative of a correspondence between the second volume and the third volume;

a determination step of determining whether there exists a copy group which relates to the deleted copy definition information by referring to the copy group related information after the deletion step; and

a deletion step which deletes the second volume which is the copy destination volume of the first copy group and which is also the a copy origin from the copy definition information, when there exists a related copy group in the copy group related information.